MTT COURSE STUDENT LEARNING OUTCOMES

MTT 101 - Introduction to Machine Shop

Students will be able to conduct themselves safely within a machine shop environment.

Students will be able to identify and discuss the use and purpose of a variety of common machine shop equipment and tools.

Students will be able to take accurate shop measurements utilizing handheld measuring devices.

MTT 105 - Machine Shop I

Students will be able to perform precision drilling operations on an engine lathe.

Students will be able to perform precision facing cuts on an engine lathe.

Students will be able to perform precision turning operations on an engine lathe.

MTT 110 - Machine Shop II

Students will be able to perform precision grooving operations on an engine lathe.

Students will be able to perform precision tapering operations on an engine lathe.

Students will be able to perform precision threading operations on an engine lathe.

MTT 120 - Technical Print Reading

Students will be able to interpret and apply blueprint related terminology.

Students will be able to decipher the contents of machine trade and engineering blueprints.

Students will be able to decipher welding trade symbols found on technical prints.

Students will be able to utilize blueprints to calculate mathematical values required for manufacturing processes.

MTT 140 - Inspection Techniques

Students will be able to determine acceptance criteria and evaluate machined components for accuracy.

Students will be able to discuss and apply Geometric Dimensioning and Tolerancing Concepts to inspection processes.

Students will be able to perform accurate shop measurements utilizing common measuring instruments.

MTT 150 - Metallurgy I

CSLOs are under review.

MTT 198 - Special Topics in Manufacturing

CSLOs are under review.

MTT 230 - Computer Numerical Control I

Students will be able to program, set-up and produce a variety of precision CNC lathe projects.

Students will be able to discuss and employ machine management principles governing CNC turning operations.

Students will be able to work as a team to design, program, produce and assemble a group CNC project.

Students will be able to calculate data point locations within a two axis Cartesian coordinate system.

Students will be able to use algebraic principles to calculate CNC program data points.

Students will be able to calculate tapers.

MTT 232 - Computer Numerical Control II

Students will be able to program, set-up and produce a variety of precision CNC mill projects.

Students will be able to discuss and employ machine management principles governing CNC mill operations.

Students will be able to operate a CNC milling machine to facilitate completion of student projects.

Students will be able to work as a team to design, program, produce, and assemble a group CNC project.

Students will be able to calculate data point locations within a three-axis Cartesian coordinate system.

Students will be able to use right-angle trigonometry to calculate CNC program data points.

Students will be able to calculate cutter speeds and feed rates.

MTT 234 - Computer Numerical Control III

Students will be able to create multi-axis CNC G-code programs utilizing proper program commands and format.

Students will be able to create employ machine management and set-up principles governing multi-axis CNC equipment.

Students will be able to operate multi-axis CNC equipment to facilitate the completion of student projects.

MTT 250 - Machine Shop III

Students will be able to perform precision end milling operations on a milling machine.

Students will be able to perform precision face milling operations on a milling machine.

Students will be able to perform precision side milling operations on a milling machine.

MTT 260 - Machine Shop IV

Students will be able to perform precision boring operations on a milling machine.

Students will be able to perform precision form cutting operations on a milling machine.

Students will be able to use angle fixtures to perform precision angular cutting operations on a milling machine.

MTT 261 - Machine Projects

Students will be able to synthesize existing knowledge, abilities, and skills with new practical experience while working with manually operated machine tools.

MTT 291 - CNC Practice

Students will be able to synthesize existing knowledge, abilities, and skills with new practical experience while working with CNC equipment and CAD/CAM systems.

MTT 292 - Computer-Aided Manufacturing I

Students will be able to create and manipulate accurate two-dimensional geometric models within a CAM system.

Students will be able to create and manipulate accurate 2 1/2 axis toolpath models within a CAM system.

Students will be able to generate 2 1/2 axis CNC G-code programs by post processing toolpath operations within a CAM system.

Students will be able to apply principles of geometry to create geometric shapes within a CAM system.

Students will be able to perform scale factor calculations to resize objects within a CAM system.

Students will be able to calculate data point locations within a polar coordinate system.

MTT 293 - Computer-Aided Manufacturing II

Students will be able to create and manipulate accurate 3 axis toolpath models within a CAM system.

Students will be able to create and manipulate accurate three-dimensional geometric, solid, and surface models within a CAM system.

Students will be able to generate 3 axis CNC G-code programs by post processing toolpath operations within a CAM system.